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審査請求　未請求　請求項の数２　ＦＤ　（全　４　頁）

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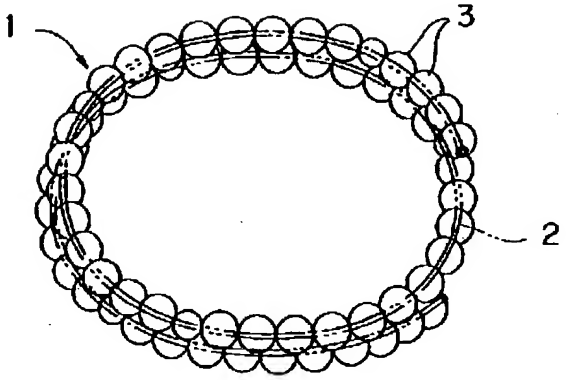
(54)【発明の名称】　ネックレス等の身飾品

(57)【要約】

【課題】　保管若しくは装着過程などで塑性変形があっても、首や腕に装着した際には、新品時の形（原形）に戻る身飾品を提供する。

【解決手段】　有端で略二重の環状をなすワイヤネックレス１のワイヤ２を、変形が体温近傍の所定の温度で原形に戻る性質を有する形状記憶合金製とする。これにより、装着前、或いは装着時にワイヤ２に塑性変形があったとしても、使用者が首に装着した後、体温でワイヤ２が冷却又は加熱され、所定の温度になって原形に戻り、その変形がなくなる。したがって、使用時の美観を損ねない。



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【特許請求の範囲】

【請求項1】　有端で環状をなすワイヤに宝玉若しくはその模造品等が装着されてなるネックレス等の身飾品において、そのワイヤを、変形が体温近傍の所定の温度で原形に戻る性質を有する形状記憶合金製としたことを特徴とするネックレス等の身飾品。

【請求項2】　前記所定の温度が、10℃～50℃の範囲内にあることを特徴とする請求項1記載のネックレス等の身飾品。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、ネックレスやブレスレットなどの身飾品に関する。

【0002】

【従来の技術】この種の身飾品として、ワイヤ（鋼線などの線材）を円形や楕円形、或いは角型などの有端の環状に、1巻（一重）或いは複数巻きに成形し、そのワイヤに宝玉若しくはその模造品等を数珠つなぎ状に装着してなるものがある。このものは、ワイヤ自体のばね性（弾性）による復元力を利用しているもので、装着に際しては、例えばネックレスの場合には、その環状体を拡径（径を広げる）して首に通せば、後はそのバネ力で元の形状に戻って首に装着されるようになっている。

【0003】

【発明が解決しようとする課題】しかし、このものでは、装着時に拡径する必要があるが、その際、ばね性を超えて拡げると、塑性変形を起こし形が歪になってしまうなど、その使用（着脱）過程や保管条件により変形を起こしやすいといった問題があった。そしてこのような変形が一旦起こると、原形に戻すのは困難であり、装着時に美観を損ねてしまうことになる。このように、従来のこの種の身飾品は外観を損ないやすく、したがってその寿命が短いといった問題があった。

【0004】本明は、かかる問題点を解消すべく案出したものであって、身飾品の使用（着脱）過程などで変形が起きても、首や腕に装着した際には、新品時の形（原形）に戻る身飾品を提供することをその目的とする。

【0005】

【課題を解決するための手段】上記の問題点を解消するために本発明は、有端で環状をなすワイヤに宝玉若しくはその模造品等が数珠つなぎ状に装着されてなるネックレス等の身飾品において、そのワイヤを、変形が（人の）体温近傍の所定の温度で原形に戻る性質を有する形状記憶合金製としたことを特徴とする。

【0006】こうした身飾品を身体に装着すると、それが体温により加熱又は冷却されてその温度が体温に近付く。これにより装着前或いは装着時の拡径などによりワイヤにその弾性限度を超えた変形があったとしても、装着した際にはその形状記憶効果により、元の形状に戻る作用があることから、新品時の形状に近付く。

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【0007】この際、前記所定の温度は、10℃～50℃の範囲内とするのが好ましいが、ワイヤは、皮膚と反対側のほとんどが大気に接していることから、一般には、体温より低温に保持される。すなわち、ワイヤは、真夏時などの特別な場合を除いて体温より高くならないから、変態のピーク時（形状記憶効果による最大復元力の発生時）の温度を体温より低め（20～35℃）に設定するのが好ましい。

【0008】

【発明の実施の形態】本発明に係る身飾品を具体化した実施形態について図1ないし図3を参照して詳細に説明する。図中、1は、本例のネックレス（ワイヤネックレス）であって、チタンニッケル合金（Ti－Ni）製の形状記憶合金からなる線径φ0．65mmのワイヤ2を、有端の円環状に約2巻きしてなり、このものに、多数の宝石3，3が数珠つなぎ状にして装着されてなるものである。ただし、本例では、図2に示したように、元の形状に戻る変態のピーク時（最大復元力（応力）の発生時）の温度が25℃に設定されているとともに、上下の変態（開始）点はその前後、±10度（15℃と35℃）に設定されている。

【0009】なお本例でのワイヤ2の両端部には、図3に示したように、外周面に所定の長さにわたり多数のローレット仕上げ状の筋目が形成され、宝石3，3の抜け止め部材4がカシメにより固着されている。因みに、この抜け止め部材4は、銀製の肉薄管（長さ6～12mm、内径1．2mm）5の端部に、円形板状をなすK18（十八金）製の抜け止め板6がロー付けされてなるものであり、その肉薄管5をワイヤ2の両端部に外嵌してカシメることにより固着されている。

【0010】しかして、変態点（温度）、15℃以下又は35℃以上で、弾性限度を超える外力が加えられるとワイヤ2は塑性変形を起こす。一方、その装着に際して、ネックレス2の径を弾性限度内で広げ、そして使用者の首に通せば、前記の塑性変形はあるものの、後はそのバネ力で一応、元の形状に戻って首に装着されるが、その装着後、体温により加熱若しくは冷却されることにより、ワイヤ2は体温よりやや低めの温度に保持される。

【0011】すなわち、例えば10℃で変形されて塑性変形が発生しており、そのものが装着されると体温により加熱され、15℃で変態を開始し、変形前の元の形状に戻るように変形を開始する。一方、ワイヤ2の温度は、皮膚と反対側がいわば空冷状態におかれている結果、大気の温度等の条件にもよるが、一般には体温よりは上昇せず、30℃±5度になる。しかして、ワイヤ2に塑性変形があっても装着すれば、その形状記憶効果による復元力によって元の形状に戻る。なお、塑性変形が、上の変態点以上で発生している場合も同様である。なお、上下の変態点の範囲内でワイヤ2が変形されて塑

性変形が発生した場合には、その外力の除去後つまり無応力状態においては、装着することなく、形状記憶効果による復元力によって元の形状に戻る。

【００１２】本発明にかかる身飾品をなすワイヤすなわち形状記憶合金の変態のピーク時およびその上下の変態（開始）温度は、体温が基準とされる。が、身飾品（ワイヤ）が指輪などのように皮膚に接して使用されるものか、皮膚から離されて使用されるものかを考慮し、さらに季節品ならば、その季節の大気の温度を考慮し、装着時にワイヤが何度になるのかを予め測定した上で、それら、すなわち変態のピーク時およびその上下の変態（開始）温度を設定し、ワイヤをこれに対応できる形状記憶合金からなるものとすればよい。

【００１３】また、装着時のワイヤの温度は、宝石等の大きさによる皮膚からそのワイヤまでの距離、或いは皮膚に直接接して装着されるか否か等の装着条件によっても異なることから、これらをも考慮した上で、変形が原形に戻る体温近傍の所定の温度を設定すればよい。また、真夏などの特別な場合を除けば、大気は体温より低いことから、ワイヤは体温より低温に保持されるので、変態のピーク時温度は、体温より低めに設定するのが適切である。

【００１４】なお、本発明におけるワイヤをなす形状記憶合金は、その形状記憶効果、すなわち、ある温度で力を加えて同ワイヤを塑性変形させた後に体温により加熱又は冷却した際において、体温近傍の所定の温度で変形前の元の形状に戻る現象が発揮されるものであればよく、その材質は格別限定されるものではない。上記におけるＴｉ－Ｎｉ系の他、Ｃｕ－Ｚｎ、Ｎｉ－Ａｌ、Ｆｅ－Ｍｎ系などの形状記憶合金、或いは、Ｔｉ－Ｎｉ－Ｃｕ合金、Ｔｉ－Ｎｉ－Ｆｅ合金、Ｃｕ－Ｚｎ－Ａｌ合金、などの三元系などの形状記憶合金から適宜に選択して使用すればよい。

【００１５】また、上記実施形態ではワイヤは、円環状で略２回巻のもので具体化したが、その巻き数は、略１

回巻としてもよいし、２～５回巻など適宜の複数巻としてもよい。そして、その形状は、上記実施形態の円環状に限られるものではなく、楕円形、三角形、若しくは四角形など、任意の形の環状とすることができる。さらに当然のことながら、ネックレスに限らず、ブレスレットや指輪などとしても具体化できることはいうまでもない。

【００１６】なお、ワイヤの線形はそれが上記実施形態のＴｉ－Ｎｉ製の形状記憶合金からなり、身飾品がネックレスの場合には、０．５～０．７５ｍｍ、指輪の場合には、０．８～１．０ｍｍ、ブレスレットの場合には０．６５～１．０ｍｍの範囲が適切である。ワイヤの材質（強度）、巻数、装着時の変形（拡径）のさせ易さなどを考慮して設計すればよい。

【００１７】

【発明の効果】本発明にかかる身飾品によれば、その装着前或いはその装着（脱着）過程でワイヤを拡径し過ぎることなどにより、塑性変形ないし歪みが生じても、それを身体に装着すると、体温により加熱又は冷却されてそのワイヤの温度が体温に近付くことから所定の形状（設定形状）に戻る。すなわち、本発明に係る身飾品によれば、装着前や装着時の塑性変形にかかわらず、装着することによりその変形が戻ることから身飾品としての美観を損ねることを長期間にわたって防止できる。

【図面の簡単な説明】

【図１】本発明の身飾品を具体化した実施形態の斜視図。

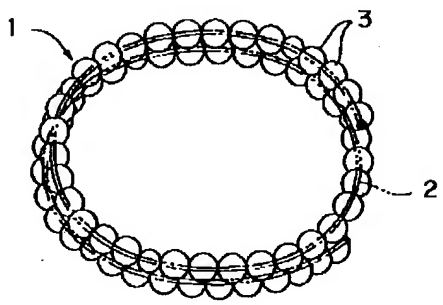
【図２】図１の身飾品のワイヤの形状記憶効果による変態点及び復元力を説明する図。

【図３】図１の実施形態のワイヤの端部を説明する部分断面拡大図。

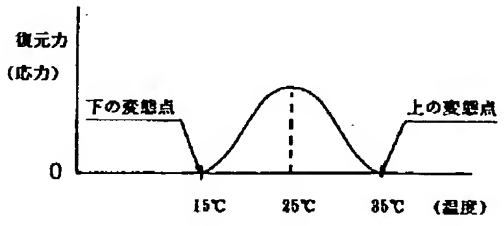
【符号の説明】

１　ネックレス
２　ワイヤ
３　宝玉

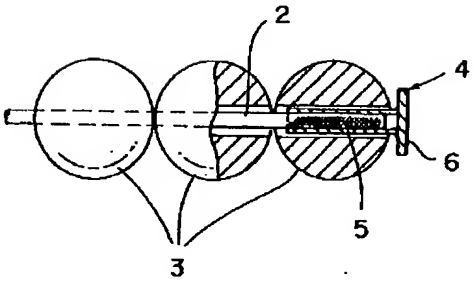
【図１】



【図２】



【図3】



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L1: Entry 4 of 5 File: DWPI Apr 22, 1997

DERWENT-ACC-NO: 1997-284125
DERWENT-WEEK: 199726

TITLE: Wire body of handing type jewelry, bracelets - includes wire made of metal alloy, deformation of which is nullified by heat treatment to predetermined temperature

PRIORITY-DATA: 1995JP-0291885 (October 13, 1995)

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PATENT-FAMILY:

	PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
☐	JP 09103310 A	April 22, 1997		004	A44C025/00

INT-CL (IPC): A44 C 25/00

ABSTRACTED-PUB-NO: JP 09103310A
BASIC-ABSTRACT:

The body includes a wire (2) made of metal alloy with toroidal edges. Individual beads (3) are sewn to form hanging type jewelry.

The shape of deformed wire is regained by heat treatment to predetermined temperature.

ADVANTAGE - Prevents damage due to deformation.

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L1: Entry 1 of 5 File: JPAB Apr 22, 1997

PUB-NO: JP409103310A
DOCUMENT-IDENTIFIER: JP 09103310 A
TITLE: ORNAMENT SUCH AS NECKLACE

PUBN-DATE: April 22, 1997

INVENTOR-INFORMATION:

NAME	COUNTRY
SEGUCHI, YOSHITO	

INT-CL (IPC): A44 C 25/00

ABSTRACT:

PROBLEM TO BE SOLVED: To provide an ornament which can be returned to the finished form (original form) when mounting on a neck or chest, even if any plastic deformation thereof is caused during the preservation, the mounting process or the like.

SOLUTION: A wire 2 of a wire necklace 1 forming almost a double ring with ends is made of a shape memory alloy having a nature of returning to the original form from a deformation at a specified temperature near a body temperature. As a result, even when the wire 2 is under a plastic deformation before or during the mounting of the necklace, the wire 2 is cooled or heated by the user's body heat and returned to the original form at a specified temperature. Thus, the deformation is eliminated thereby keeping appearance unchanged in use.

Patent/ public disclosure document

[Abstract(made by the applicant)] [Claims] [Detail Description] [Drawing Description]
PATOLIS will not assume the accuracy or the reliability of the translation

JP 9-103310

(57)
[ABSTRACT]

[PROBLEM TO BE SOLVED]
Even if plastic deformation matches by safekeeping or a wearing process, when it was attached to a neck and an arm, *mikazarihin* coming back is provided in form (the original form) in a new article.
[SOLUTION]
Transformation does wire 2 of wire necklace 1 which generally makes a double loop in *yutan* with a product made in shape-memory alloy having a property to come back to the original form with predetermined temperature of temperature around. By this, Even if it is assumed that plastic deformation was in wire 2 at the time of wearing ago or wearing, after a user attached to a neck, wire 2 cools by a temperature or is heated, it is in predetermined temperature, and the original form is come back to, the transformation disappears. Thus, A beautiful sight at the time of use is not harmed.

[WHAT IS CLAIMED IS]

[Claim 1]
To a wire making a loop in *yutan*, in precious stone or *mikazarihin* such as a necklace the imitations are put on, and to become; *mikazarihin* such as a necklace including it having been assumed that it was made by a shape-memory alloy; comprising: The property that transformation returns with the wire in the original form with predetermined temperature of a temperature neighborhood.
[Claim 2]
mikazarihin such as a necklace; according to claim 1 wherein; There are temperatures of said place Sadamu in a range of 10 degrees Celsius - 50 degrees Celsius.

[DETAILED DESCRIPTION OF THE INVENTION]

[0001]

[TECHNICAL FIELD OF THE INVENTION]
The present invention relates to necklace and *mikazarihin* such as a bracelet.
[0002]

[PRIOR ART]
As this kind of *mikazarihin*, a wire (a wire rod such as steel wire) is molded as 1 (one fold) or plural scrolls in a loop of circle and oval or *yutan* of corner types, there is a precious stone or the thing that the imitations are loaded to the letter of a string, and it is to the wire. For example, this thing increases the diameter of the loop body in the event of a necklace on the occasion of wearing with the thing which there is using spring of wire in itself-related (the elasticity) power of restitution (a diameter is widened), if it is done, and it is put through a neck, original shape is come back to by the spring afterward, and become load by a neck.
[0003]

[PROBLEM TO BE SOLVED BY THE INVENTION]
However, It is had to increase the diameter of at the time of wearing with this thing, but, on that occasion plastic deformation was waked up, and form became distorted, and there was a problem to be easy to wake up transformation by the use (attachment and detachment) process and a safekeeping condition when it was opened ahead of spring characteristics. And it is difficult that it is returned to the original form and is to fail with a beautiful sight at the time of wearing when such a transformation is caused once. Thus, Conventional this kind of *mikazarihin* is easy to lose the appearance , therefore, there were the problems which the life had a short.
[0004]
Even if problems to take should be broken off, and Honmyou gave a plan, and transformation gets up by use

(attachment and detachment) processes of *mikazarihin*, when it was loaded to a neck and an arm, that *mikazarihin* coming back to form (the original form) in a new article is provided is done with the object.
[0005]

[MEANS TO SOLVE THE PROBLEM]
As for the present invention, a precious stone or the imitation is loaded to the letter of a string by a wire making a loop in *yutan* to break off the problems and is characterized by that transformation (a person) did the wire with a product made in shape-memory alloy having a property to come back to the original form with predetermined temperature of temperature around in *mikazarihin* such as the necklace that it is.
[0006]
It heats by a temperature or when such *mikazarihin* is attached to a body, it is cooled off, and the temperature nears a temperature. By this, Even if it is assumed that transformation beyond the elastic limit was in a wire by increasing the diameter of at the time of before wearing or wearing, shape in a new article is approached by being able to come back to original shape by the shape-memory effect when it was loaded.
[0007]
In doing so, It is preferable for temperature of place Sadamu to assume a range of 10 degrees Celsius - 50 degrees Celsius, but, because skin and most of the other side contact with the atmosphere, in general terms, a wire is held than a temperature by low temperature. In other words, Because it does not become higher than a temperature except the case that the height of summers are special as for the wire, it is preferable to set temperature in a metamorphic peak (outbreak time of the greatest power of restitution by a shape-memory effect) to lowering (20-35 degrees Celsius) than a temperature.
[0008]

[MODE FOR CARRYING OUT THE INVENTION]
The embodiment that realized mikazarihin concerning the present invention is given explanation that it is FIG. 1 about. 1 is this necklace in question (a wire necklace), and about 2 come in the shape of a circle of *yutan*, and wire 2 of line diameter phi 0.65mm comprising shape-memory alloys made by a titanium nickel alloy (Ti - Ni) is done, and, in a figure, it is, lot of jewels 3,3 do to the letter of a string, and is loaded by this thing, and it is. But, In this example, as indicated in FIG. 2, temperature of a peak hour (outbreak time of greatest power of restitution (stress)) of a metamorphosis to return to original shape is set to 25 degrees Celsius, and an upper and lower metamorphosis (a start) point is set to ? 10 degrees (15 degrees Celsius and 35 degrees Celsius) after front of it.
[0009]
In addition, To an ends of wire 2 by this example, a line of contact of a letter of lot of roulette finish is formed by predetermined length as indicated in FIG. 3 by outer circumferential surface, foolishness of jewel 3,3 stop, and member 4 is adhered by a mosquito Japanese hawfinch. By the way,, of a product made in this K18 (18-karat gold) which it stop falling out, and do a letter of circular plate member 4 in an end of silver bitter fighting pipe (6-12mm long, 1.2mm inside diameter) 5, outrun, and stop, and be accompanied by low, and board 6 is done, and it is, it outwardly-engages, and is adhered mosquito Japanese hawfinch *rukotoniyori* with the bitter fighting pipe 5 by an ends of wire 2.
[0010]
Thus With the above wire 2 wakes up plastic deformation transition temperature (temperature), less than 15 degrees Celsius or 35 degrees Celsius when external force of greater than an elastic limit is added. On the other hand, On the occasion of the wearing, a diameter of necklace 2 is opened in an elastic limit and if it is let go through to a neck of a user, although there is, original shape is come back to, and the plastic deformation is loaded by the spring for the time being afterward by a neck, but , after the wearing, wire 2 is held in more slightly than a temperature low temperature by a temperature by application of heat or being cooled.
[0011]
In other words, By way of example only, is transformed at 10 degrees Celsius, and plastic deformation occurs, when itself is loaded, is heated by a temperature, a metamorphosis is started at 15 degrees Celsius, transformation is started to come back to original shape before transformation. On the other hand, As a result that is put in the state that skin and the other side, so to speak, air-cool temperature of wire 2, a condition such as temperature of the atmosphere is depended on, but , in general terms, it is in 30 degrees Celsius ? five times without rising than a temperature. Thus If plastic deformation is in wire 2, and it is put on, original shape is

come back to by means of power of restitution by the shape-memory effect. In addition, When it attends more than an upper transition temperature, and plastic deformation occurs, it is similar. In addition, Original shape is come back to by power of restitution by a shape-memory effect without loading in after the removal of the external force that is a no stress state when wire 2 is transformed in a range of an upper and lower transition temperature, and plastic deformation occurred.

[0012]

As for the wire making *mikazarihin* hanging to the present invention namely in a metamorphic peak and the, besides, lower metamorphosis (a start) temperature of a shape-memory alloy, a temperature is done with a standard. But it considers whether *mikazarihin* (a wire) seems to wear a ring, and is employed close against skin whether is taken its eyes off skin, and is employed, if, even more particularly, it is a season product, temperature of the atmosphere of the season is considered, after a wire measured how many degrees it was to at the time of wearing beforehand, them namely in an abnormal peak and, besides, lower metamorphosis (a start) temperature are set, it is preferable when it supposes with a thing comprising the shape-memory alloys which can cope with this with a wire.

[0013]

In addition, After, from the thing that was different by the wearing condition that temperature of a wire at the time of wearing contacted with distance from skin by size such as a jewel to the wire or skin directly, and was loaded, having considered these, transformation should set predetermined temperature of temperature around to come back to the original form. In addition, Apart from a special case like the height of summer, as for the atmosphere, a wire is held than a temperature from a low thing than a temperature by low temperature. Hence: It is appropriate that temperature sets lower than a temperature in a metamorphic peak.

[0014]

In addition, After having made the shape-memory alloy which made a wire in the present invention added power with the shape memory effect namely a certain temperature, and the wire deform plastically, application of heat or a phenomenon to come back to original shape before transformation with predetermined temperature of temperature around in cooled case should be shown by a temperature, the materials are not the things which are particularly limited. It is chosen among Cu-Zn, Ni-Al, a shape-memory alloy of Fe - Mn system or a Ti-Ni-Cu alloy, a Ti - Ni - Fe alloy, a shape-memory alloy such as Sanmoto system such as a Cu-Zn-Al alloy appropriately, and, other than Ti - Ni system in the above, it should employ.

[0015]

In addition, The wire was generally realized with a thing of a volume with a letter of circle in the embodiment twice, but, the number of the scrolls is generally preferable as a volume once and is preferable as 2-5 times volumes appropriate plural number volume. And, An oval rather than a thing limited to in the shape of a circle of the embodiment, a triangle or a quadrangle can do the shape with an arbitrary-shaped loop. Even more particularly, of course, it goes without saying that it can realize as a bracelet or a ring without being limited to a necklace.

[0016]

In addition, A range of 0.65-1.0mm is appropriate in the event of 0.8-1.0mm, a bracelet in the event of 0.5-0.75mm, a ring in the case of a necklace *mikazarihin* from the shape-memory alloy that it is made by Ti - Ni of the embodiment linear shape of a wire. Of transformation (it is increased the diameter of) at the time of materials (strength) of a wire, the reel number, wearing, place, and it is by fortunetelling, and it is considered, and it should be designed.

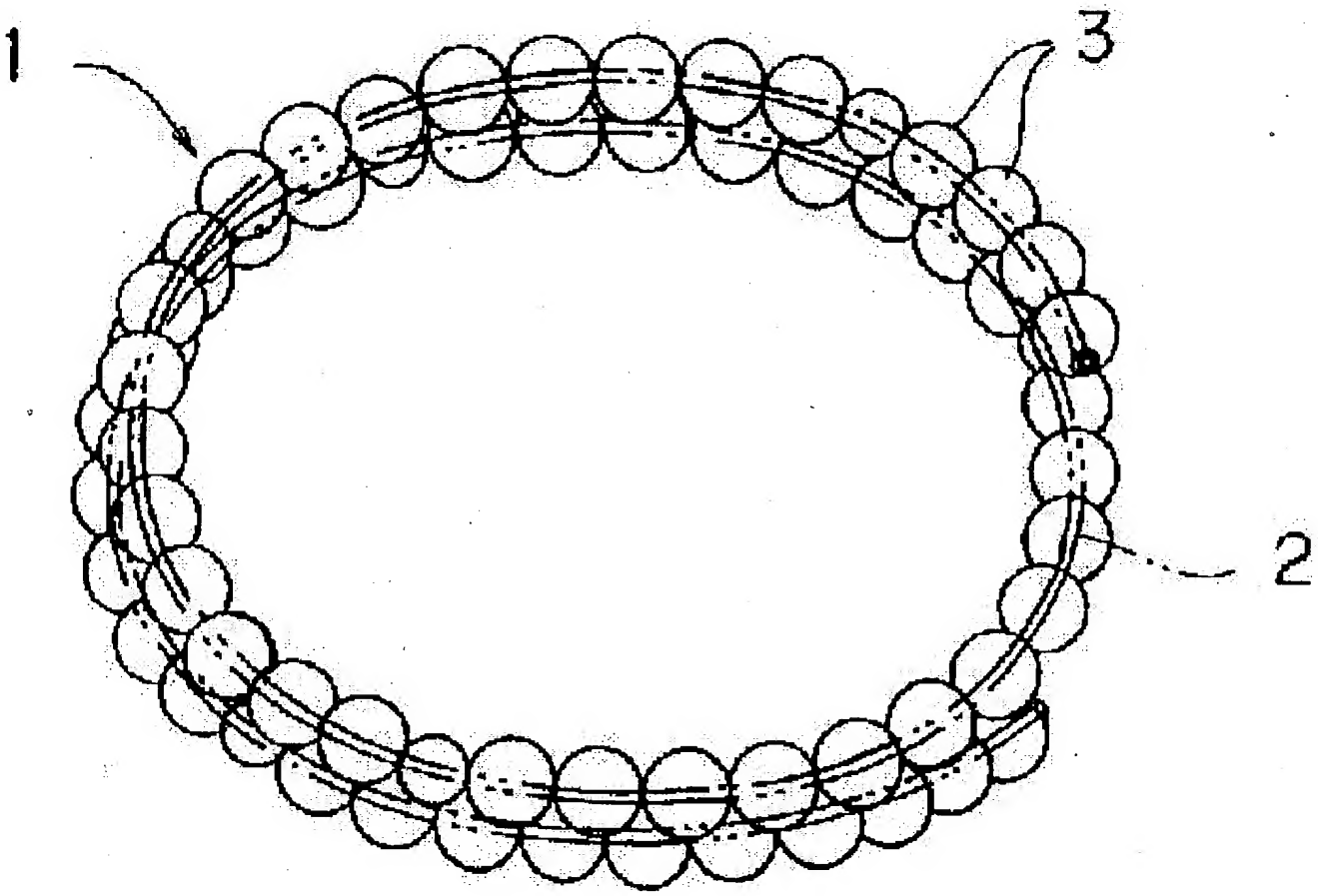
[0017]

[EFFECT OF THE INVENTION]

According to *mikazarihin* hanging to the present invention, it is plastic deformation by increasing too much the diameter of a wire by before the wearing or the wearing (desorption) process, even if it is, and it is done, and a distortion produces, when it is loaded to a body, predetermined shape (setting shape) is come back to by a temperature because is cooled, and temperature of the wire approaches a temperature. In other words, A long term is lasted for, and, according to *mikazarihin* concerning the present invention, that a beautiful sight as *mikazarihin* is harmed because the transformation comes back by putting on can be prevented regardless of before wearing and plastic deformation at the time of wearing.

[BRIEF DESCRIPTION OF DRAWINGS]

[FIG. 1]
It is a perspective diagram of the embodiment that realized *mikazarihin* of the present invention.
[FIG. 2]
It is a transition temperature by a shape-memory effect of a wire of *mikazarihin* of FIG. 1 and a figure explaining power of restitution.
[FIG. 3]
It is a partial section enlarged view explaining an end of a wire of an embodiment of FIG. 1.
[DENOTATION OF REFERENCE NUMERALS]
One two three necklace wire precious stones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